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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/943,150	08/30/2001	Daniel P. DeLuca	01-415	8646

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EXAMINER

WILKINS III, HARRY D

ART UNIT	PAPER NUMBER
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1742

DATE MAILED: 09/30/2002

4

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/943,150

Applicant(s)

DELUCA ET AL.

Examiner

Harry D Wilkins, III

Art Unit

1742

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-26 is/are pending in the application.
- 4a) Of the above claim(s) 12-23 is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-11 and 24-26 is/are rejected.
- 7) ☒ Claim(s) 4 and 10 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 30 August 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). ____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) ____ 6) ☐ Other:

DETAILED ACTION

Election/Restrictions

1. Restriction to one of the following inventions is required under 35 U.S.C. 121:
 - I. Claims 1-11 and 24-26, drawn to a nickel-based alloy, classified in class 148, subclass 426.
 - II. Claims 12-23, drawn to a method of producing a nickel-based alloy, classified in class 148, subclass 555.

The inventions are distinct, each from the other because of the following reasons:

2. Inventions I and II are related as process of making and product made. The inventions are distinct if either or both of the following can be shown: (1) that the process as claimed can be used to make other and materially different product or (2) that the product as claimed can be made by another and materially different process (MPEP § 806.05(f)). In the instant case the process of claim 12 can be used to make a materially different product, such as a different nickel-based alloy, for example the composition disclosed by DeLuca et al in US 6,355,117 in claim 1.
3. Because these inventions are distinct for the reasons given above and have acquired a separate status in the art as shown by their different classification, restriction for examination purposes as indicated is proper.
4. During a telephone conversation with Barry Kelmachter on 5 September 2002 a provisional election was made with traverse to prosecute the invention of group I, claims 1-11 and 24-26. Affirmation of this election must be made by applicant in replying to

this Office action. Claims 12-23 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

5. Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventorship must be accompanied by a request under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(i).

Claim Objections

6. Claims 4 and 10 are objected to because of the following informalities: these claims contain redundant subject matter. The limitation that the "fine γ' particles ... have an average particle size in the range of from 0.45 μ to 0.55 μ " is a redundant limitation due to the definition of "fine γ' particles" on page 7, lines 2-3 of the specification. Appropriate correction is required.

Claim Rejections - 35 USC § 112

7. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

8. Claims 4 and 11 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

9. Claim 4 recites the limitation "said large γ' particles" in lines 1-2. There is insufficient antecedent basis for this limitation in the claim. Claim 3 recites "large γ' precipitates".

10. Claim 11 recites the limitation "said large γ " in line 2. There is insufficient antecedent basis for this limitation in the claim.

Claim Rejections - 35 USC § 102

11. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

12. Claims 1, 2, 3, 5, 6, 24 and 26 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by Erickson (US 5,366,695).

Erickson anticipates the claimed invention. Erickson teaches (see abstract and title) a single crystal nickel-based superalloy that contains 1.8-4.0 wt% Cr, 0.25-2.0 wt% Mo, 3.5-7.5 wt% W, 5.0-7.0 wt% Re, 7.0-10.0 wt% Ta, 5.0-7.0 wt% Al, 1.5-9.0 wt% Co, 0-0.15 wt% Hf, 0-0.5 wt% Nb (columbium), 0.1-1.2 wt% Ti and the balance Ni. Erickson further teaches (see col 2, lines 44-56) that the alloy may contain 0-0.04 wt% C, 0-0.01 wt% B, 0-0.01 wt% Zr and 0-0.1 wt% V. This composition overlaps the presently claimed range at 3.0-4.0 wt% Cr, 0.25-2.0 wt% Mo, 3.5-7.5 wt% W, 5.0 wt% Re, 7-10 wt% Ta, 5-7 wt% Al, 1.5-9.0 wt% Co, 0-0.04 wt% C, 0-0.01 wt% B, 0-0.01 wt% Zr, 0-0.15 wt% Hf, 0-0.5 wt% Nb, 0-0.1 wt% V and 0.1-0.7 wt% Ti. Regarding the presence of at least one of Ru, Rh, Pd, Os, Ir and Pt, the present claim recites a range of "up to 10 wt%" which includes zero addition of the element. Erickson teaches (see col 37, lines 55-58) that the alloy is subjected to HIP (hot isostatic pressing) in order to remove casting defects such as pores. Thus, the superalloy of Erickson is free from pores.

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Erickson teaches (see table 4) that the process includes a step of solutionizing wherein up to 100% of the γ' is taken into solution. Thus, the superalloy of Erickson is free from eutectic $\gamma - \gamma'$.

Regarding claim 2, Erickson teaches (see col 11, line 63 to col 12, line 21) that the alloy is treated to produce primary gamma prime particles and also secondary gamma prime particles with an ultra-fine size. Thus, Erickson teaches an alloy with a gamma prime morphology with a bimodal γ' distribution.

Regarding claim 3, one of ordinary skill in the art would have expected the bimodal γ' distribution to inherently have a uniform distribution of large γ' precipitates in a continuous gamma matrix and a uniform distribution of fine γ' particles as claimed because a uniform distribution is desirable in terms of homogeneity of properties across an object.

Regarding claim 5, Erickson teaches (see title) that the superalloy is a single crystal.

Regarding claims 6 and 24, see above regarding claim 2.

Regarding claim 26, see above regarding claims 1 and 24.

Claim Rejections - 35 USC § 103

13. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

14. Claims 4, 7-11 and 25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Erickson (US 5,366,695).

The teachings of Erickson are described above in paragraph no. 12. Erickson does not expressly teach the size of the gamma prime precipitates.

However, given the teaching of Erickson (see col 11, line 66 to col 12, line 21), it would have been within the expected skill of a routineer in the art to adjust the primary gamma prime aging condition in order to obtain a desirable gamma prime particle size such as 1.0-20 μ as claimed. Erickson defines that the small gamma prime particles have an "ultra-fine" size. It is a general definition in the art that "ultra-fine" means sizes in the sub-micron range. Therefore, Erickson teaches that the small gamma prime particles have a size of less than 1 μ , such as 0.45-0.55 μ as claimed.

Regarding claim 7, see paragraph above about the size of the large gamma prime particles.

Regarding claims 8 and 9, Erickson does not expressly teach the amount of large gamma prime particles present. However, given the teaching of Erickson (see col 11, line 66 to col 12, line 21), it would have been within the expected skill of a routineer in the art to adjust the primary gamma prime aging condition in order to obtain a desirable amount of gamma prime particles such as 25-50 vol% or 27-45 vol% as claimed.

Regarding claim 10, see paragraph above about the size of the small gamma prime particles.

Regarding claim 11, Erickson does not expressly teach the shape of the large and small gamma prime particles. However, given the teaching of Erickson (see col 11,

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line 66 to col 12, line 21), it would have been within the expected skill of a routineer in the art to adjust the primary gamma prime aging condition in order to obtain a desirable shape for the large and small gamma prime particles such as octet and cuboidal, respectively, as claimed.

Regarding claim 25, see paragraph above about the size of the large and small gamma prime particles.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Harry D Wilkins, III whose telephone number is 703-305-9927. The examiner can normally be reached on M-Th 6:30am-5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Roy V King can be reached on 703-308-1146. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9310 for regular communications and 703-872-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0661.

Harry D Wilkins, III
Examiner
Art Unit 1742

hdw
September 25, 2002


ROY KING
SUPERVISORY PATENT EXAMINER
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